SERVICE MANUAL

STEREO RECEIVER

SANYO

JCX2200LU
(EUROPE)

SPECIFICATIONS

Amplifier Section

Total music power	80 watts (at 4 ohms)
Continuous power	35 watts x 2 (at 4 ohms)
	30 watts x 2 (at 8 ohms)
Total harmonic distortion	less than 0.1% (—3dB power/1kHz)
Power band width	20Hz/30kHz (—3dB power)
Frequency response	7Hz/50kHz (+0.5dB/—3dB)
Input sensitivity and impedance	
PHONO	2.5mV/50k ohms
AUX	150mV/50k ohms
TAPE 1 PLAY	150mV/50k ohms
TAPE 1 REC/PB	150mV/50k ohms
REC/PB (TAPE 2)	150mV/50k ohms
Output	
TAPE 1 REC	150mV
TAPE 1 REC/PB	0.55mV/k ohm
REC/PB (TAPE 2)	0.55mV/k ohm
Tone control response	
BASS at 100Hz	±10dB
MID at 1kHz	±6dB
TREBLE at 10kHz	±10dB
Loudness control response	
at 100Hz	+10dB
at 10kHz	+6dB
Hum and noise ratio	
PHONO	70dB
AUX	90dB
TAPE 1 PLAY	90dB
Damping factor	more than 25 (20Hz/20kHz at 8 ohms)

FM Tuner Section

Frequency range	87.5 — 108MHz
Usable sensitivity	1.8μV (DIN)
Signal-to-noise ratio	70dB (at Mono)
	65dB (at Stereo)
Harmonic distortion	0.2% (at Mono)
	0.3% (at Stereo)
AM suppression	more than 60dB
Spurious response	more than 70dB
Alternate channel selectivity	more than 55dB (±300kHz DIN)
Image rejection	more than 50dB
Capture ratio	0.8dB
Stereo separation	40dB (at 1kHz)
Antenna input	300 ohms balanced

LW/MW Tuner Section

Frequency range	LW: 150 — 350kHz
	MW: 510 — 1605kHz
Sensitivity	300μV/m (MW), 600μV/m (LW)
Signal-to-noise ratio	50dB (MW)
Image rejection	48dB (MW)
Selectivity	33dB (10kHz) (MW)
Antenna	External ferrite bar antenna

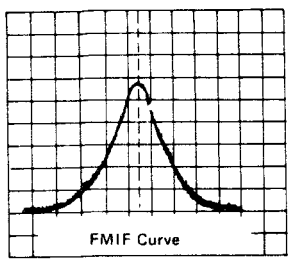
General

Power requirements	AC: 125/220V, 50Hz
Power consumption	180W
Dimensions	17-3/8"W x 5-7/8"H x 12-1/4"D
	(440 x 146 x 310 mm)
Weight	Approx. 24 lbs. (11 kg)

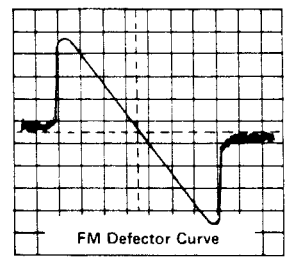
* Specifications subject to change without notice.

FM IF ADJUSTMENT

1. V curve adjustment
   1) Connect TP12 (HOT) and TP13 (EARTH) to the output terminal of the sweep generator, and TP8 (R215) and TP11 (E) to the input terminal.
   2) Connect a resistance load of about 10 to 50 K-ohms to the input of the sweep generator and disconnect the tuning meter leadwires from the circuit board.
   3) Cut off ceramic capacitor C213 (0.022μF) at one end.
   4) Make adjustment while keeping the output from the sweep generator at the low level (where noise appears on the waveform).
   5) While watching the sweep waveform, adjust the T201 until the sweep waveform presents the pattern as in Fig.1.
      * TP13 is a shield plate.



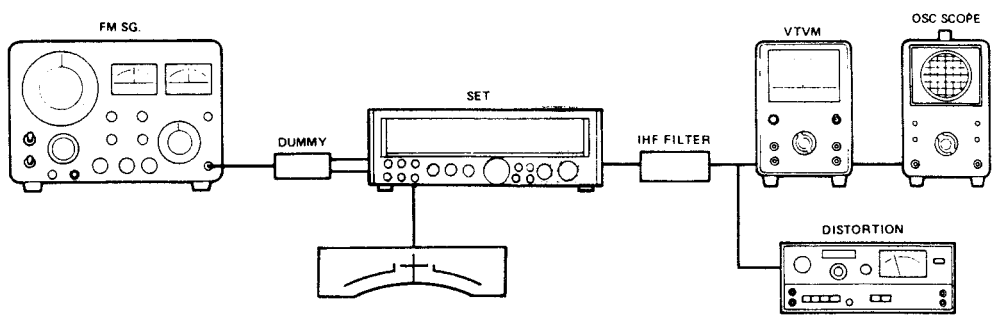
2. S curve adjustment
   1) Connect TP12 (H) and TP13 (E) to the output the sweep generator. Connect TP14 (H) and TP11 (E) to its input.
      NOTE: It is necessary to connect a capacitor (1μF/16V) to the input of the sweep generator (H) for cutting DC current.
   2) Adjust the T202 until the S curve presents the pattern as in Fig. 2. Avoid turning the T203 unless absolutely necessary.



CENTER ADJUSTMENT OF TUNING METER

Set FM SG as follows: modulation frequency 1KHz, frequency deviation 75KHz DIV. (100% modulation).
Connect a balanced dummy of 300 ohms between FM SG and the unit (at the 300 ohm terminal of the external antenna).

1) Set the tuning dial of the unit to 98MHz (where no Broadcasting signal is coming in).
2) While keeping the FM SG output level to 0 (less than 10dB), adjust the T202 until the tuning meter needle stands at the center point.
3) Adjust the frequency output of FM SG so that the tuning meter needle stands at the center point.
4) Reduce the distortion factor a minimum by turning the T203. Make this adjustment at the input level of 60 dB (1mV) to the 300 ohm antenna terminal.
5) Repeat steps 2) and 3) above.
6) Turn the core of T201 only slightly until the distortion factor becomes minimal.
7) Set the FM SG output level to 0. Confirm tuning meter needle stands at the center point. If needle is not at center point, repeat from steps 2).
8) Apply 60 dB to the 300 ohm antenna terminal. Conform the distortion factor becomes minimum when the tuning meter needle is at center point.
   NOTE: Use Hum and Sub-carrier Filter to obtain accurate distortion factor.

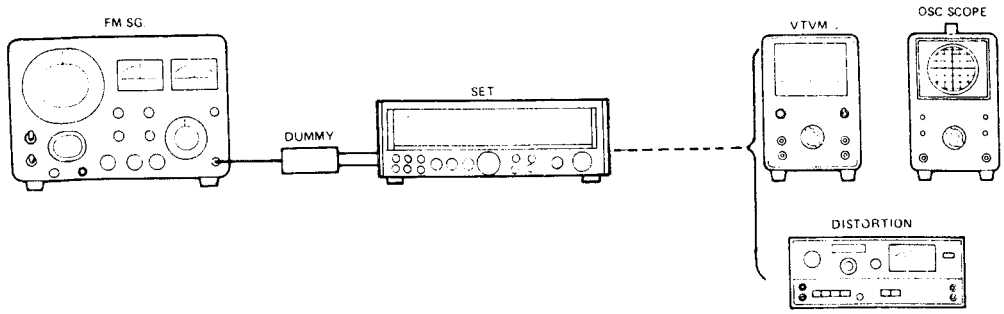


FM TRACKING

Set FM SG as follows: modulation frequency 1KHz, frequency diviation 75KHz DIV. (100% modulation).
Flip the MODE switch of the unit to "MONO".

1) Make LOW TRACKING adjustment by means of L102 and L101. Use 90MHz FM signal for this purpose.
2) Make HIGH TRACKING adjustment by means of CT2 and CT1. Use 106MHz FM signal for this purpose.
3) Make complete TRACKING adjustment by repeating steps (1) and (2).

* When properly adjusted, the distortion factor of the output from the unit is reduced to a minimum, provided that the distortion factor of the SG output is about 3%.



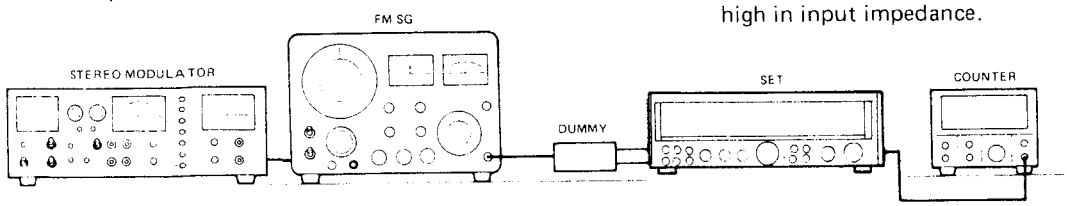
FM VCO ADJUSTMENT

Set the frequency of FM SG to 98MHz (where no broadcasting signal is coming in), the muting switch of the unit to ON and the pilot signal of the stereo modulation to a modulation degree of 9%.

1) Increase the output level of FM SG until the stereo pilot lamp of the unit glows. Then, keep the glowing of the stereo pilot lamp for more than 10 seconds).
2) Adjust R307 (SVR) until the frequency counter reading becomes 19000Hz ±19 Hz immediately after cutting off the SG output (viz. after the stereo pilot lamp has gone out).

* Do not make this adjustment immediately after setting to ON the power switch of the unit.

* For this adjustment, use a frequency counter relatively high in input impedance.

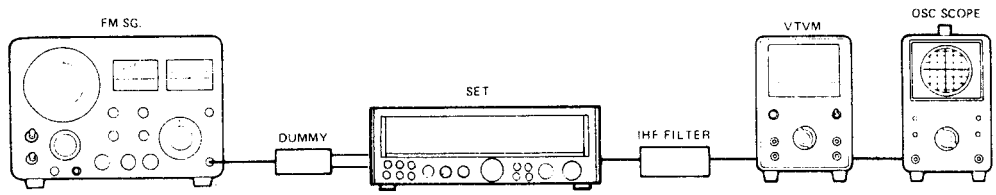


FM MUTING LEVEL ADJUSTMENT

Set FM SG as follows: modulation frequency 1kHz. frequency deviation 75kHz DIV. (100% modulation). Then, set the muting switch of the unit to ON.

1) Set FM SG to 98MHz and tune the unit to that frequency level.
2) Apply 16dB (5μV) to the 300 ohm antenna terminal.
3) Turn R227(SVR) and set it at the position where the VTVM needle stops swinging or the waveform on the oscilloscope becomes very small.

* When the muting function is ON, the waveform decreases in size, and weak signals and noise are cut off.



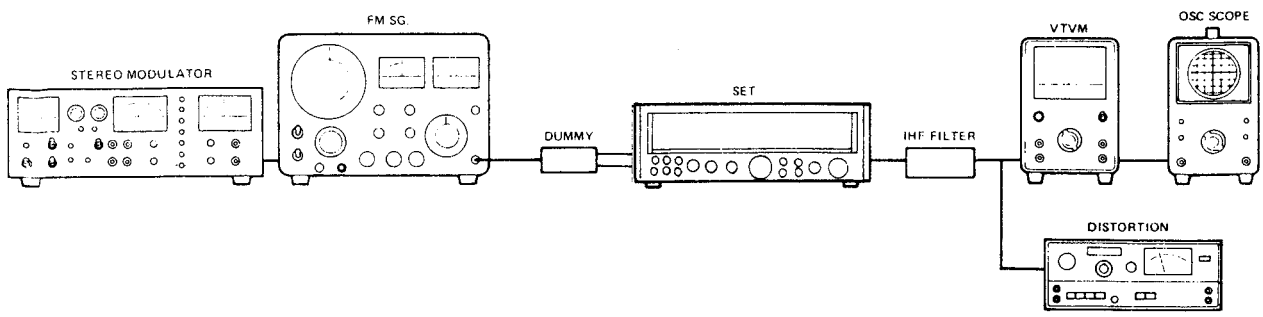
SEPARATION

Set FM SG as follows: modulation frequency 1KHz, frequency 98MHz. Set the pilot signal of the stereo modulator to a modulation degree of 9%. PL + L + R = 75KHz DIV. (9% + 91%)

Select the "STEREO" mode by the mode switch of the unit.

1) Set the input to the unit (i.e. voltage at the 300 ohm terminal of the external antenna) to 60dB (1mV).
2) Generator L-R signals by the stereo modulator and tune the unit completely to their level. (In this state, the distortion factor is reduced to a minimum.)
3) Switch the stereo modulator from R to L channels. Reduce signel output leakage of each channel to a minimum by adjusting R306(SVR).

* When making this adjustment, use a lowpass filter and eliminate 19KHz and 38KHz carrier components.



19KHz TRAP ADJUSTMENT

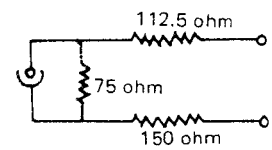
Set the frequency of FM SG to 98MHz and the pilot signal of the stereo modulator to a modulation degree of 9%.

1) Set the tuning dial of the unit to 98MHz.
2) Apply 60dB to the 300 ohm antenna terminal.
3) Turn L301, L302 until the leakage of 19KHz becomes minimum.
   NOTE: Use 200Hz HIGH-PASS FILTER.

FM ALIGNMENT

Step	Adjusting Circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	I.F.	Connect sweep generator to FM Terminals TP12 (H) & TP13 (E)	Connect oscilloscope to test point TP-8 (H), TP-11 (E)	10.7 MHz (0% modulation)	Near max. capacitance of tuning gang with no station signal.	T201	
2	Ratio Det.		Connect oscilloscope to test point TP-14(H), TP-11 (E)			T202	
3	OSC.	Connect FM SG. to FM ANT. Terminals. TP-1 (H) & TP-2 (E)	Connect VTVM to TP-6 TP-7 (H) & TP-11	87.4 MHz (400 Hz 30% modulation)	Low end of dial scale	L103	Max.
4				109.0 MHz (400 Hz 30% modulation)	High end of dial scale	CT3	
5	ANT.	Connect FM SG. to FM ANT. Terminals. TP-1 (H) & TP-2 (E)	Connect VTVM to TP-6 TP-7 (H) & TP-11	90.0 MHz (400 Hz 30% modulation)	90.0 MHz on dial scale	L101, L102	Max.
6				106.0 MHz (400 Hz 30% modulation)	106.0 MHz on dial scale	CT1, CT2	
7	Repeat adjustments						

PREPARE:
1. Set the dial pointer to very left line of dial scale.
2. Connect sweep generator, FM SG. VTVM and oscilloscope. FM ANT input impedance is 300 ohm.
3. Use a screwdriver with plastic grip for all adjustments.
4. Use a 300 ohm balanced dummy load.



MW ALIGNMENT

Step	Adjusting Circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	I.F.T.	Connect sweep generator to Test Loop	Connect oscilloscope to TP-6 TP-7 (H) & TP-11	460 KHz (400 Hz 30% modulation)	Low end of dial scale. With no station signal.	T204	Max.
2	OSC.	Connect MW SG to Test Loop.	Connect VTVM to TP-6 TP-7 (H) & TP-11	505 KHz (400 Hz 30% modulation)	Low end of dial scale	L105	Max.
3				1700 KHz (400 Hz 30% modulation)	High end of dial scale	CT5	
4	ANT.	Connect MW SG to Test Loop.	Connect VTVM to TP-6 TP-7 (H) & TP-11	600 KHz (400 Hz 30% modulation)	600 KHz on dial scale	L104-MW	Max.
5				1400 KHz (400 Hz 30% modulation)	1400 KHz on dial scale	CT6	
6	Repeat adjustments.						

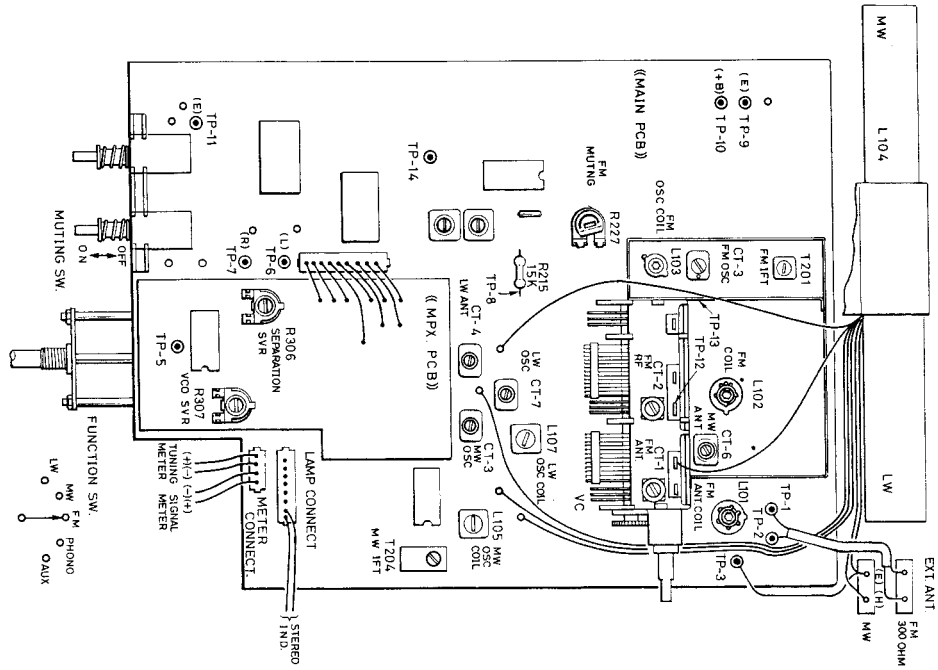
PREPARE:
1. Set the dial pointer to very left line on dial scale.
2. Use a screwdriver with plastic grip for all adjustments.
3. Selector switch to "MW".
4. Connect sweep generator, MW SG, VTVM and oscilloscope.

LW ALIGNMENT

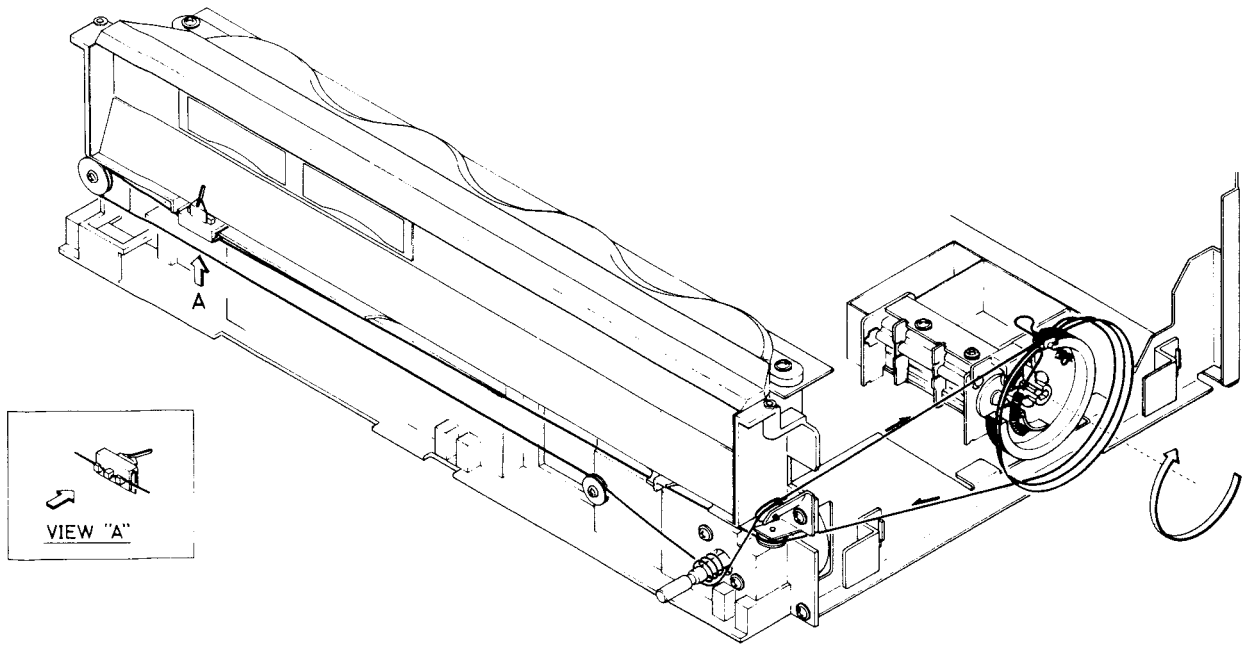
Step	Adjusting Circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	OSC.	Connect MW SG to Test Loop	Connect VTVM to TP-6 TP-7 (H) & TP-11	145 KHz (400 Hz 30% modulation)	Low end of dial scale	L107	Max.
2				365 KHz (400 Hz 30% modulation)	High end of dial scale	CT7	
3	ANT.	Connect MW SG to Test Loop	Connect VTVM to TP-6 TP-7 (H) & TP-11	160 KHz (400 Hz 30% modulation)	160 KHz on dial scale	L104-LW	Max.
4				340 KHz (400 Hz 30% modulation)	340 KHz on dial scale	CT4	
5	Repeat adjustments.						

PREPARE:
1. Set the dial pointer to very left line on dial scale.
2. Use a screw driver with plastic grip for all adjustment.
3. Selector switch to "LW".
4. Connect sweep generator, MW SG, VTVM and oscilloscope.

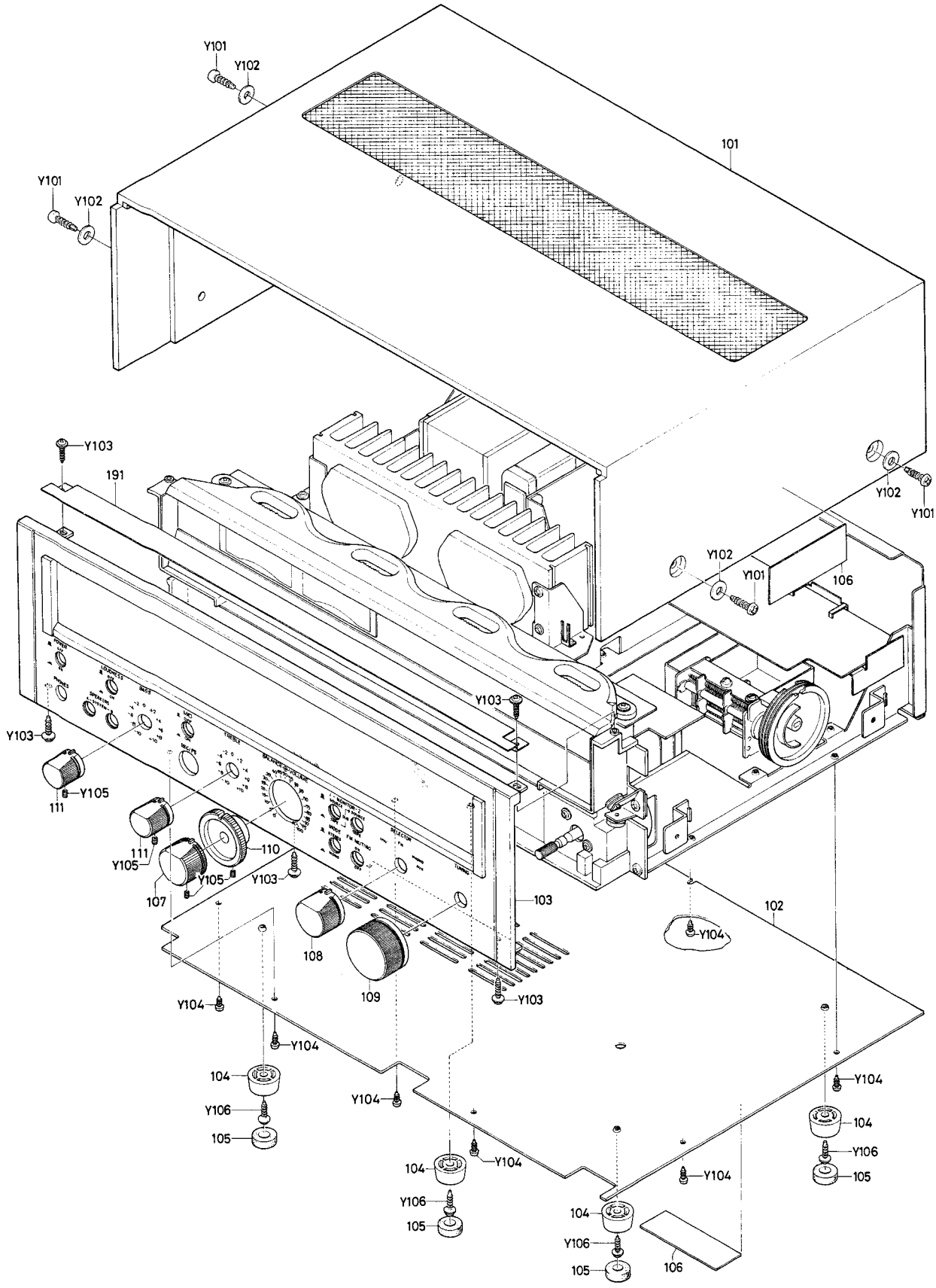
PARTS LOCATION



DIAL CORD STRINGING



CABINET EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
CABINET			
101	141-0-111T-11800	Cabinet Assy	1
102	141-2-125T-11200	Bottom Lid	1
103	141-9-122T-06600	Front Panel Assy	1
104	141-2-174T-04700	Stand	4
105	141-2-441T-05000	Felt Cushion	4
106	141-6-472T-14900	Caution Label	2
107	141-0-163T-13700	Rotary Knob Assy, Volume	1
108	141-0-163T-12400	Rotary Knob Assy, Select	1
109	141-0-163T-12500	Rotary Knob Assy, Tuning	1
110	141-2-163T-44300	Rotary Knob, Balance	1
111	141-0-163T-13500	Rotary Knob Assy, Bass/ Treble	2
CHASSIS			
151	141-2-315T-13900	Reinforcement	1
152	141-2-315T-14000	Reinforcement	1
153	141-2-315T-14100	Reinforcement	1
154	141-2-310T-05000	Bracket, Cabinet	2
155	141-2-371T-08200	Bracket Transformer	1
156	141-2-464T-14400	Fixer, AC Cord	1
157	141-2-310T-09200	Bracket, PCB	1
158	141-2-214T-02101	Bracket Frame	1
159	141-2-421T-20900	Special Screw, Pulley	4
160	141-2-661T-71200	Pulley	1
161	141-2-661T-71300	Pulley	3
162	141-2-310T-04700	Bracket, Pulley	1
163	141-2-753T-22000	Shaft, AC Switch	1
164	141-2-464T-21300	Fixer	2
165	123-2-472R10700	Lug	2
166	141-2-184T-05100	Tape	1
167	141-2-210T-05700	Bracket	1
168	141-2-464T-26000	Fixer, ANT	1
169	141-2-411T-08700	Plate Nut, DIN Socket	1
170	141-2-126T-22500	Back LID	1
171	141-2-566T-06600	Tuning Shaft	1
172	141-2-524T-07600	Bracket, Flywheel	1
173	141-2-453T-30500	Washer 4.1 x 6.5 x 0.1 Nylon	2
174	141-2-521T-01600	Flywheel	1
175	141-2-411T-08100	Plate Nut, Voltage Select	1
176	141-2-464T-20600	Fixer	1
177	141-2-464T-08700	Fixer	7
178	141-2-464T-24100	Fixer	1
179	141-2-464T-24000	Fixer	2
180	141-9-146T-01300	Dial Scale Assy	1
181	141-0-161T-02800	Push Button Assy	6
182	141-0-161T-02900	Push Button Assy	3
183	141-9-511T-00400	Pointer Assy	1
184	141-2-246T-12900	Sheet	1
185	141-2-329T-04500	Reflector	1
186	141-2-340T-00200	Rope	1
187	141-2-538T-07300	Drum	1
188	141-2-855T-14800	Spring Coil, Dial	1
189	141-2-329T-05000	Reflector, Stereo Lamp	1
190	123-2-457R-11700	Special Washer	1
191	141-2-328T-05200	Shield Light	1
192	141-2-753T-31600	Shaft, Monitor Switch	2
193	141-2-253T-09100	Joint	2
194	141-2-852T-43900	Spring Wire	2
195	141-2-153T-31200	Escutcheon	2
196	141-2-453T-01700	Washer 3 x 10 x 1 Fiber	2
197	141-2-457T-23600	Special Washer	1
198	141-2-457T-23100	Special Washer	1
199	141-2-464T-20671	Fixer	1
ELECTRICAL PARTS			
201	4-251T-72000	Power Trans	1
202	4-243T-77173	Power Cord	1
203	4-237T-07000	Terminal Board, Speaker	2
204	141-2-383T-04800	Fuse Holder	1
205	4-234T-06171	Fuse 2.5A	2
206	141-2-382T-06900	Terminal	1
207	141-2-382T-07000	Terminal	2
208	4-511T-08200	Meter	1
209	4-511T-08300	Meter, Tuning	1
210		Carbon 1.8K ohm ±10% 1/4W (R200)	1

Ref. No.	Part No.	Description	Q'ty
ELECTRICAL PARTS			
211	4-231T-53672	Switch, Voltage Selector	1
212	4-257T-25601	ANT Coil Assy	1
213	4-235T-44400	Socket, FM	1
214	4-235T-44500	Socket, AM	1
215	141-2-369T-05400	Bracket Coil	1
216	4-235T-43900	Socket	1
217	141-2-310T-09000	Bracket	1
218	141-2-368T-11100	Heat Sink, IC	1
219	141-2-310T-04800	Bracket	1
220	141-2-310T-04900	Bracket	1
221	141-2-310T-09100	Bracket	1
222	141-2-3687-11000	Heat Sink, Transistor	1
223	4-234T-02171	Fuse 630mA 250V	1
224	141-2-310T-08900	Bracket	1
225	4-235T-48600	Socket, Lamp	1
226	4-234T-04771	Fuse 1.4A	1
227	4-234T-04471	Fuse 1A	1
228	4-234T-06071	Fuse 1.6A	1
229	141-2-310T-07600	Bracket	1
230	141-2-253T-07500	Joint	1
231	141-2-246T-19900	Sheet	1
232	141-2-327T-16600	Insulator	1
233	141-2-310T-08400	Braket	1
234	141-2-464T-27600	Fixer	1
235	141-2-210T-06200	Bracket, MPX PCB	2
236	141-2-472T-01001	Lug	2
237	4-235T-48500	Socket PCB-PCB	1
238	141-6-476T-10200	Indication Label	1
239	4-231T-37000	Switch, Tuner	1
240	141-2-243T-02700	Base	2
DC POWER PCB ASSY			
241	140-9-230T-57500	P. C Board Assy, DC Power	1
	141-2-381T-01800	Bracket, Fuse	2
Q901		Transistor 2SD438 E	1
Q902		Transistor 2SD333 E	1
D901, 902 903, 904		Diodo DS150 A	4
D905		Diodo 1N4003	1
D906		Diodo WZ130	1
	CAPACITORS		
C906, 097	4-163T-00600	Electrolytic 6800μF 35V	2
C911		Electrolytic 1000μF 16V	1
C908		Electrolytic 470μF 50V	1
C909, 912		Electrolytic 220μF 50V	2
C910		Electrolytic 220μF 16V	1
C901, 902 903, 904 905		Ceramic 0.01μF 50V	5
C915, 916, 917		Mylar 0.1μF 50V±20%	3
	RESISTORS		
R903		Metal 150 ohm ±5% 3W	1
R906		Solid 6.8K ohm ±10% 1/2W	1
R905		Solid 1K ohm ±10% 1/2W	1
R907		Solid 1.2K ohm ±10% 1/2W	1
R901		Metal 47 ohm ±5% 1/2W	1
R904		Carbon 4.7K ohm ±5% 1/4W	1
INDICATOR LAMP PCB ASSY			
242	140-9-230T-57600	P. C Board Assy, Indicator Lamp	1
	4-612T-08100	Lamp 6.3V 65mA, Function	5
	4-612T-08200	Lamp 6V 30mA, Stereo	1

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
PHONO AMP PCB ASSY			
	140-9-230T-61500	P. C Board Assy, Phono Amp	1
	141-2-310T-08200	Bracket	1
	4-235T-48400	Socket, RCA Type X4 PH/AUX/REC/TAPE	2
	4-231T-63700	Switch, Tape/Mon	1
	4-235T-48300	Socket, DIN	1
IC701, 801		IC TA7129P	2
	CAPACITORS		
C705, 805		Electrolytic 47μF 6.3V	2
C702, 802		Electrolytic 4.7μF 25V	2
C710, 810		Electrolytic 1μF 50V	2
C711		Electrolytic 470μF 50V	1
C712, 713, 714		Ceramic 0.01μF 50V +80 −20%	3
C704, 804		Ceramic 47PF 50V ±10%	2
C703, 803		Ceramic 47PF 50V ±5%	4
C741, 841		Ceramic 100PF 50V ±10%	2
C708, 808		Mylar 0.022μF 50V ±10%	2
C707, 709 807, 809		Mylar 0.0033μF 50V ±10%	4
C706, 806		Mylar 0.0039μF 50V ±20%	2
	RESISTORS		
R706, 806		Carbon 470 ohm ±5% 1/4W	2
R703, 803 741, 841		Carbon 270K ohm ±5% 1/4W	4
R705, 805		Carbon 180K ohm ±5% 1/4W	2
R709, 809 710, 810		Carbon 100K ohm ±5% 1/4W	4
R702, 802		Carbon 68K ohm ±5% 1/4W	2
R708, 808		Carbon 27K ohm ±5% 1/4W	2
R711, 811		Carbon 18K ohm ±5% 1/4W	2
R707, 807		Carbon 10K ohm ±5% 1/4W	2
R712, 812		Carbon 4.7K ohm ±5% 1/4W	2
R701, 801		Carbon 2.2K ohm ±5% 1/4W	2
R704, 804		Carbon 220 ohm ±5% 1/4W	2
DIAL LAMP PCB ASSY			
244	140-9-230T-68200	P. C. Board Assy, Dial Lamp	1
	4-612T-07371	Lamp	4
	141-2-381T-01800	Bracket Fuse	
	141-6-476T-10300	Indication Label	1
SPEAKER SWITCH PCB ASSY			
245	140-9-230T-30600	P. C. Board Assy, Speaker Switch	1
	4-231T-63600	Switch	1
HEADPHONE PCB ASSY			
246	140-9-230T-30500	P. C. Board Assy, Headphone	1
	4-235T-36771	Socket	1
R755, 855	Metal Oxide Film	Metal Oxide Resistor 330 ohm ±5% 1W	2
POWER SWITCH PCB ASSY			
247	140-9-230T-68300	P. C. Board Assy, Power Switch	1
	4-231T-60900	Switch	1
C918, 919	4-223T-04700	Capacitor	2
	141-2-381T-01800	Bracket Fuse	4
	141-6-476T-09400	Indication Label	1

Ref. No.	Part No.	Description	Q'ty
DIN SOCKET PCB ASSY			
248	140-9-230T-75600	P. C. Board Assy, DIN Socket	1
	4-235T-48300	Socket	1
	(RESISTORS)		
R742,842		Carbon 270K ohm ±5% 1/4W	2
	CAPACITORS		
C742,842		Ceramic 100pF 50V ±10%	2
TUNER PCB ASSY			
249	140-9-230T-56600	P. C. Board Assy, Tuner	1
L101	4-265T-05100	V.H.F Coil	1
L102	4-265T-03800	V.H.F Coil	1
L103	4-265T-03900	V.H.F Coil	1
T201	4-256T-05140	I.F.T	1
T202	4-256T-10100	I.F.T	1
T203	4-256T-10200	I.F.T	1
T204	4-256T-07871	I.F. Filter	1
L202	4-253T-09900	Filter	1
L105	4-258T-15540	OSC Coil	1
L107	4-258T-18140	OSC Coil	1
R227	4-222T-39576	Semi Fixed Variable Resistor	1
CT-3	4-224T-08800	Trimmer	1
	4-224T-08372	Variable Capacitor	1
CT-4	4-224T-07600	Torrimer	2
L106, 201	4-253T-08600	HI-Flequency Choke	2
CT-5	4-224R-11671	Trimmer	1
LPF301, 303	4-255T-01300	MX Coil	2
	141-2-322T-35501	Shield Plate	1
	141-2-322T-40800	Shield Plate	1
CT-7	4-224R-11671	Trimmer	1
	4-231T-63400	Switch, FM Muting	1
	4-231T-68700	Switch, Select	1
B101	123-2-471R-10900	Core	1
	4-236T-10271	Plug, Meter	1
	4-236T-10275	Plug, Lamp	1
	4-236T-10276	Plug, PCB-PCB	1
	4-256T-80500	I.F. Filter	
	4-256T-80571	I.F. Filter	
CF201, 202, 203	4-256T-80572	I.F. Filter or	3
	4-256T-80573	I.F. Filter	
	4-256T-80574	I.F. Filter	
Q101		Transistor 3SK-59GR FET	1
Q102		Transistor 2SC535 B	1
Q201		Transistor 2SC930 E IF	1
Q103, 105 106		Transistor 2SC930 E	3
Q202		Transistor 2SC536 G AUD	1
Q315, 316 317		Transistor 2SC945P	3
Q104		Transistor 2SC536 G AUD	1
Q311, 313		Transistor 2SA702 F ALF	2
Q310, 312		Transistor 2SC1571 G	2
Q314		Transistor 2SA702 F ALF	1
Q318		Transistor 2SA608 E	1
D243, 244, 308, 241 242, 105 204, 101, 106, 102, 201		Diode 1S2473	11
D202, 103		Diode 1S188 FM	2
D205		Diode MA-26(Yellow)	1
IC201		IC LA1230	1
IC101		IC HA1138	1

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
TUNER PCB ASSY			
	CAPACITORS		
C226		Electrolytic 0.47μF 50V	1
C209		Electrolytic 1μF 25V	1
C228		Electrolytic 1μF 25V	1
C207		Electrolytic 4.7μF 25V	1
C241		Electrolytic 4.7μF 25V	1
C118		Electrolytic 10μF 16V	1
C223		Electrolytic 33μF 10V	1
C225		Electrolytic 100μF 16V	1
C227		Electrolytic 100μF 16V	1
C320, 330		Electrolytic 0.47μF 50V	2
C247		Electrolytic 4.7μF 25V	1
C117		Mylar 0.01μF 50V ±20%	1
C121		Mylar 0.01μF 50V ±20%	1
C221		Mylar 0.01μF 50V ±20%	1
C132		Mylar 0.022μF 50V ±20%	1
C134		Mylar 0.022μF 50V ±20%	1
C135		Mylar 0.022μF 50V ±20%	1
C136		Mylar 0.022μF 50V ±20%	1
C240		Mylar 0.033μF 50V ±20%	1
C224		Mylar 0.047μF 50V ±20%	1
C242		Mylar 0.068μF 50V ±20%	1
C321, 331		Mylar 0.01μF ±101	2
C322, 332		Mylar 0.0047μF 50V ±101	2
C246		Mylar 0.0033μF 50V ±20%	1
C243		Mylar 0.0033μF 50V ±20%	1
C122		Styrol 300pF 125V ±5%	1
C131		Styrol 180pF 125V ±5%	1
C108		Ceramic 2pF 50V ±0.25pF	1
C106		Ceramic 4pF 50V ±0.25pF	1
C114		Ceramic 6pF 50V ±0.25pF	1
C101		Ceramic 12pF 50V ±10%	1
C105		Ceramic 12pF 50V ±10%	1
C112		Ceramic 15pF 50V ±5%	1
C115		Ceramic 20pF 50V ±5%	1
C113		Ceramic 33pF 50V ±10%	1
C208		Ceramic 33pF 50V ±10%	1
C216		Ceramic 47pF 50V ±10%	1
C109		Ceramic 100pF 50V ±10%	1
C222		Ceramic 220pF 50V ±20%	1
C137		Ceramic 5pF 50V ±0.25pF	1
C123		Ceramic 6pF 50V ±0.25pF	1
C133		Ceramic 82pF 50V ±5%	1
C244		Ceramic 680pF 50V ±10%	1
C103, 107		Ceramic 0.001μF 50V ±20%	2
C213, 130		Ceramic 0.022μF 50V +80 — 20%	2
C110, 124		Ceramic 0.022μF 50V +80 — 20%	1
C102, 111, 119		Ceramic 0.01μF 50V +80 — 20%	3
C120, 125, 201		Ceramic 0.01μF 50V +80 — 20%	3
C202, 203, 218		Ceramic 0.01μF 50V +80 — 20%	3
C232		Ceramic 0.01μF 50V +80 — 20%	1
C204, 205, 206		Ceramic 0.047μF 50V +80 — 20%	3
C210, 211, 212		Ceramic 0.047μF 50V +80 — 20%	3
C217, 245		Ceramic 0.047μF 50V +80 — 20%	2
C233		Ceramic 0.01μF 50V +80 — 20%	1
C129		Ceramic 220pF 50V ±10%	1
C100		Ceramic 16pF 50V ±10%	1
	RESISTORS		
R101, 247		Carbon 100K ohm ±5% 1/4W	2
R216		Carbon 100K ohm ±5% 1/4W	1
R327		Carbon 100K ohm ±5% 1/4W	1
R132		Carbon 39K ohm ±5% 1/4W	1

Ref. No.	Part No.	Description	Q'ty
TUNER PCB ASSY			
R107		Carbon 1K ohm ±5% 1/4W	1
R326		Carbon 3.3K ohm ±5% 1/4W	1
R324		Carbon 680 ohm ±5% 1/4W	1
R334		Carbon 680 ohm ±5% 1/4W	1
R323		Carbon 3.9K ohm ±5% 1/4W	1
R209		Carbon 22K ohm ±5% 1/4W	1
R337		Carbon 100K ohm ±5% 1/4W	1
R135		Carbon 56K ohm ±5% 1/4W	1
R249		Carbon 100 ohm ±5% 1/4W	1
R106		Carbon 150 ohm ±5% 1/4W	1
R111		Carbon 150 ohm ±5% 1/4W	1
R110		Solid 56 ohm ±5% 1/4W	1
R223		Solid 56 ohm ±5% 1/4W	1
R214, 231		Solid 56 ohm ±5% 1/4W	2
R114		Carbon 15K ohm ±5% 1/4W	1
R133		Carbon 3.3K ohm ±5% 1/4W	1
R211		Carbon 6.8K ohm ±5% 1/4W	1
R325, 335		Carbon 6.8K ohm ±5% 1/4W	2
R246		Carbon 8.2K ohm ±5% 1/4W	1
R328, 338		Carbon 8.2K ohm ±5% 1/4W	2
R131		Carbon 5.6K ohm ±5% 1/4W	1
R113		Carbon 12K ohm ±5% 1/4W	1
R202		Carbon 10K ohm ±5% 1/4W	1
R321, 331		Carbon 10K ohm ±5% 1/4W	2
R242, 229		Carbon 12K ohm ±5% 1/4W	2
R245		Carbon 12K ohm ±5% 1/4W	1
R136		Carbon 3.3K ohm ±5% 1/4W	1
R204		Carbon 18K ohm ±5% 1/4W	1
R274		Carbon 10K ohm ±5% 1/4W	1
R105		Carbon 33K ohm ±5% 1/4W	1
R108, 320, 330		Carbon 39K ohm ±5% 1/4W	3
R241		Carbon 39K ohm ±5% 1/4W	1
R218		Carbon 39K ohm ±5% 1/4W	1
R104, 116		Carbon 5.6K ohm ±5% 1/4W	2
R208		Carbon 27K ohm ±5% 1/4W	1
R244		Carbon 12K ohm ±5% 1/4W	1
R115		Carbon 2.7K ohm ±5% 1/4W	1
R228		Carbon 330 ohm ±5% 1/4W	1
R226		Carbon 12K ohm ±5% 1/4W	1
R251		Carbon 1K ohm ±5% 1/4W	1
R256		Carbon 33K ohm ±5% 1/4W	1
R253		Carbon 33K ohm ±5% 1/4W	1
R255		Carbon 3.3K ohm ±5% 1/4W	1
R254		Carbon 100 ohm ±5% 1/4W	1
R252		Carbon 47K ohm ±5% 1/4W	1
R138		Carbon 220 ohm ±5% 1/4W	1
R322		Carbon 100 ohm ±5% 1/4W	1
R215		Carbon 15K ohm ±5% 1/4W	1
R103		Carbon 10 ohm ±5% 1/4W	1
R117		Carbon 100 ohm ±5% 1/4W	1
R332		Carbon 100 ohm ±5% 1/4W	1
R201		Carbon 560 ohm ±5% 1/4W	1
R205, 207		Carbon 330 ohm ±5% 1/4W	2
R225		Carbon 330 ohm ±5% 1/4W	1
R210		Carbon 680 ohm ±5% 1/4W	1
R230		Carbon 1.2K ohm ±5% 1/4W	1
R243		Carbon 1.8K ohm ±5% 1/4W	1
R203		Carbon 1.8K ohm ±5% 1/4W	1
R219, 240, 213		Carbon 2.2K ohm ±5% 1/4W	3
R112		Carbon 2.7K ohm ±5% 1/4W	1

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
TUNER PCB ASSY			
R336, 217		Carbon 3.3K ohm ±5% 1/4W	2
R248		Carbon 3.9K ohm ±5% 1/4W	1
R222		Carbon 3.9K ohm ±5% 1/4W	1
R333		Carbon 3.9K ohm ±5% 1/4W	1
R130		Carbon 4.7K ohm ±5% 1/4W	1
R109		Carbon 5.6K ohm ±5% 1/4W	1
R134		Carbon 8.2K ohm ±5% 1/4W	1
R221		Carbon 2K ohm ±5% 1/4W	1
R299		Carbon 22K ohm ±5% 1/4W	1
MPX PCB ASSY			
250	140-9-230T-56700	P. C Board Assy, MPX	1
R307	4-222T-39474	Semi Fixed Variable Resistor 5K-B	1
R306	4-222T-39472	Semi Fixed Variable Resistor 1K-B	1
IC301		IC LA3350S	1
D301		Diode 1S2473	1
D311		Diode 1S2473	1
D307		Diode WZ250	1
D303, 304, 305, 306		Diode 1S2472	4
D302		Diode 1S188 AM	1
Q303		Transistor 2SC536 F AUD	1
Q301, 302		Transistor 2SC945P	2
Q304		Transistor 2SC536G AUD	1
	CAPACITORS		
C302		Mylar 0.047μF 50V ±20%	1
C309		Styrol 1500pF 125V ±5%	1
C301		Electrolytic 4.7μF 25V	1
C310, 311		Electrolytic 4.7μF 25V	2
C303		Electrolytic 470μF 16V	1
C350		Electrolytic 100μF 35V	1
C351, 352		Electrolytic 10μF 35V	2
C353		Electrolytic 100μF 10V	1
C312		Electrolytic 1μF 25V	1
C306		Electrolytic 0.22μF 10V ±20%	1
C308		Electrolytic 0.33μF 10V ±20%	1
C307		Electrolytic 0.47μF 10V ±20%	1
	RESISTERS		
R356, 362		Carbon 100 ohm ±5% 1/4W	2
R305		Carbon 1K ohm ±5% 1/4W	1
R302, 303 308		Carbon 3.3K ohm ±5% 1/4W	3
R310		Carbon 8.2K ohm ±5% 1/4W	1
R309		Carbon 10K ohm ±5% 1/4W	1
R311		Carbon 15K ohm ±5% 1/4W	1
R360		Carbon 4.7K ohm ±5% 1/4W	1
R353, 359		Carbon 10K ohm ±5% 1/4W	2
R361		Carbon 10K ohm ±5% 1/4W	1
R355		Carbon 27K ohm ±5% 1/4W	1
R357		Carbon 47K ohm ±5% 1/4W	1
R354		Carbon 47K ohm ±5% 1/4W	1
R358		Carbon 82K ohm ±5% 1/4W	1
R352		Carbon 27K ohm ±5% 1/4W	1
R312, 313		Carbon 100K ohm ±5% 1/4W	2
R304		Carbon 220 ohm ±5% 1/4W	1
R351		Solid 330 ohm ±10% 1/2W	1

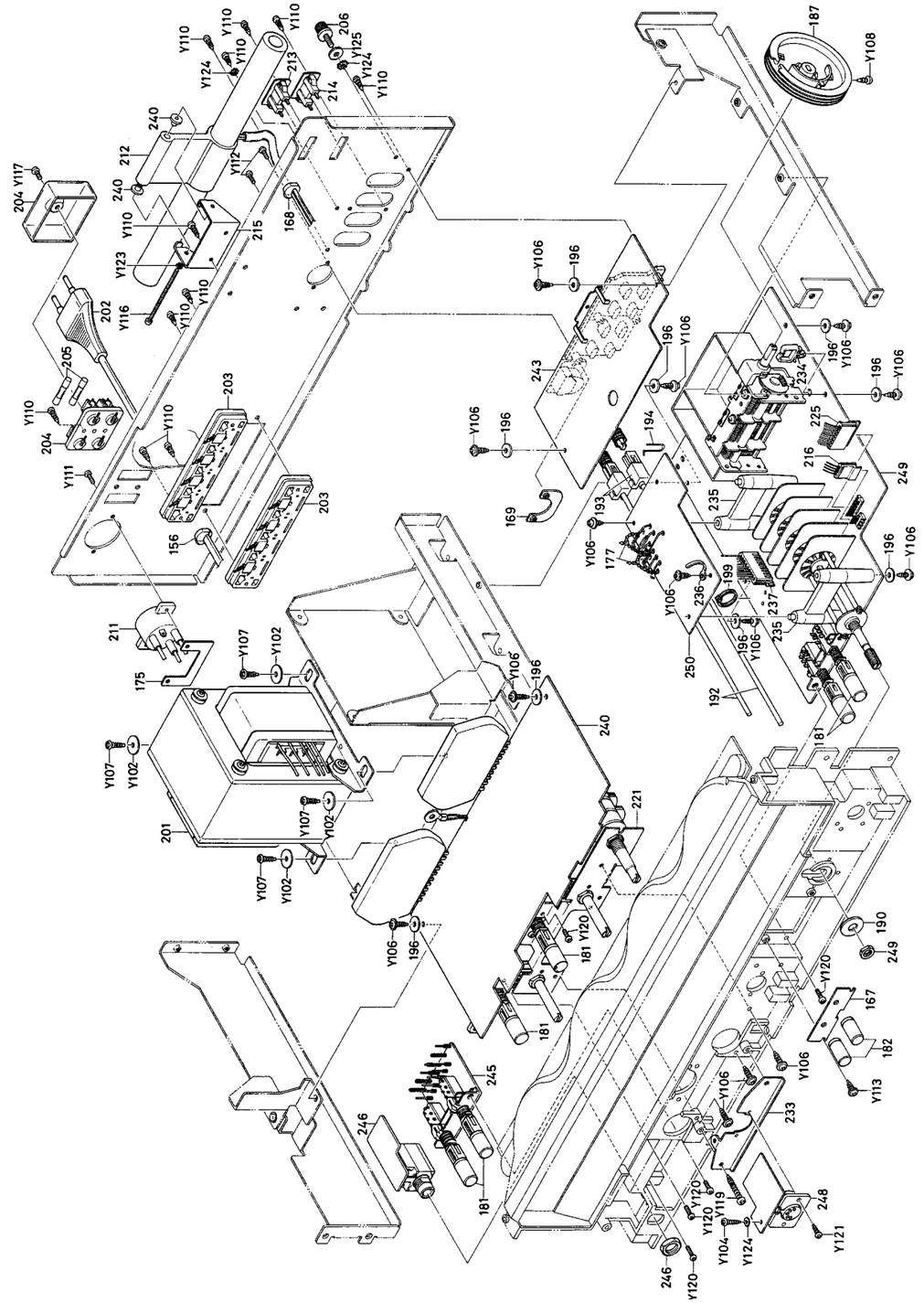
Ref. No.	Part No.	Cescription	Q'ty
PRI MAIN AMP PCB ASSY			
251	140-9-230T-57400	P.C Board Assy Pri main Amp	1
	4-222T-59400	Variable Resistor, VR, Barance	1
	4-222T-57000	Variable Resistor 100K-B, Tone	2
	4-231T-63800	Switch, Loudness	1
	4-231T-69200	Push Switch	1
	4-209T-01171	Pozistor	1
L751, 851	4-252T-05200	Low Frequ Choke	2
		IC STT-078	2
Q752, 852		Transistor 2SA929G	2
Q751, 753		Transistor 2SC1571G	4
851, 853			
Q754, 854		Transistor 2SC945P	2
Q903		Transistor 2SC536G	1
D907, 909		Diode DS442X	3
910			
D908		Diode YZ047	1
	CAPACITORS		
C753, 853		Electrolytic 0.47μF 50V	2
C761, 763, 764, 766		Electrolytic 1μF 50V	4
C861, 863, 864, 866		Electrolytic 1μF 50V	4
C770, 774, 870, 874		Electrolytic 220μF 35V	4
C762, 862		Electrolytic 100μF 6.3V	2
C768, 868, 914		Electrolytic 47μF 16V	3
C771, 773 871, 873		Electrolytic 10μF 35V	4
C913		Electrolytic 470μF 35V	1
C772, 872		Mylar 0.047μF 50V ±20%	2
C752, 852		Mylar 0.033μF 50V ±5%	2
C759, 859, 860, 760		Mylar 0.022μF 50V ±5%	4
C758, 858		Mylar 0.0047μF 50V ±5%	2
C757, 857		Mylar 0.0027μF 50V ±5%	2
C756, 856		Mylar 0.0018μF 50V ±5%	2
C765, 865		Ceramic 0.01μF 50V +80 — 20%	2
C767, 867		Ceramic 820pF 50V ±10%	2
C751, 851		Ceramic 680pF 50V ±10%	2
C754, 854		Ceramic 220pF 50V ±10%	2
C769, 869		Ceramic 2pF 50V ±20%	2
C755, 855		Electrolytic 2.2μF 50V	2
	RESISTORS		
R785, 885		Metal 5.6 ohm ±5% 1W	2
R783, 784, 883, 884		Metal 100 ohm ±5% 1/2W	4
R909		Metal 1.2K ohm ±5% 2W	1
R753, 756, 853, 856		Carbon 1M ohm ±5% 1/4W	4
R758, 858		Carbon 560K ohm ±5% 1/4W	2
R772, 872		Carbon 220K ohm ±5% 1/4W	2
R777, 877		Carbon 100K ohm ±5% 1/4W	2
R759, 859		Carbon 150K ohm ±5% 1/4W	2
R780, 782, 880, 882		Carbon 5.6K ohm ±5% 1/4W	4
R765, 766, 865, 866, 908		Carbon 47K ohm ±5% 1/4W	5
R773, 873		Carbon 33K ohm ±5% 1/4W	2
R768, 771, 868, 871		Carbon 27K ohm ±5% 1/4W	4
R757, 857		Carbon 39K ohm ±5% 1/4W	2
R769, 770, 869, 870		Carbon 15K ohm ±5% 1/4W	4
R754, 854		Carbon 8.2K ohm ±5% 1/4W	2
R752, 762, 763, 764, 767		Carbon 6.8K ohm ±5% 1/4W	5

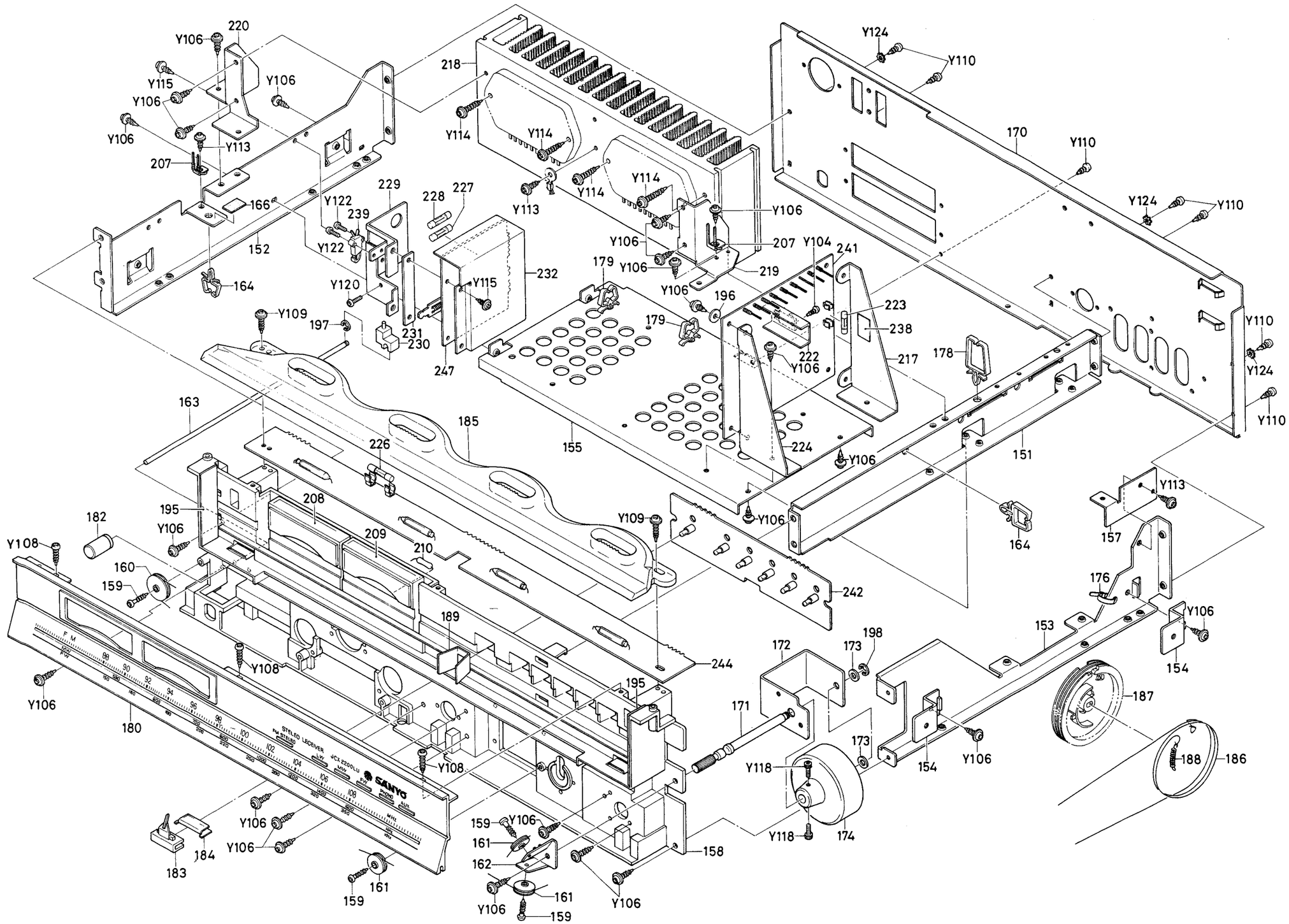
PARTS LIST

Ref. No.	Part No.	Description	Q'ty
PRI MAIN AMP PCB ASSY			
R852, 862, 863, 864, 867		Carbon 6.8K ohm ±5% 1/4W	5
R751, 761, 851, 861		Carbon 4.7K ohm ±5% 1/4W	4
R774, 874		Carbon 5.6K ohm ±5% 1/4W	2
R781, 881		Carbon 2.7K ohm ±5% 1/4W	2
R776, 778, 876, 878		Carbon 2.2K ohm ±5% 1/4W	4
R779, 879		Carbon 1.5K ohm ±5% 1/4W	2
R775, 875, 875		Carbon 1K ohm ±5% 1/4W	3
R760, 860		Carbon 820 ohm ±5% 1/4W	2
SCREW MOUNTING			
Y101		Binding Hd. Taping Screw 4 x 16	4
Y102		Washer 4 x 13 x 1.2	8
Y103		Pan Hd. Taping Screw W/Washer 3 x 12	5
Y104		Pan Head Taping Screw 3 x 8	8
Y105		Hexagon Set Screw 3 x 4	4
Y106		Pan Hd. Taping Screw W/Washer 3 x 10	46
Y107		Pan Head Taping Screw 4 x 8	4
Y108		Pan Head Taping Screw 3 x 12	4
Y109		Pan Hd. Taping Screw W/Washer 3 x 16	2
Y110		Binding Hd. Taping Screw 3 x 10	20
Y111		Binding Head Screw 3 x 8	2
Y112		Pan Head Screw 2.6 x 6	2
Y113		Pan Hd. Taping Screw W/Washer 3 x 8	5
Y114		Pan Hd. Taping Screw W/Washer 3 x 16	4
Y115		Pan Hd. Taping Screw W/Washer 3 x 6	3
Y116		Pan Head Screw 3 x 50	1
Y117		Pan Head Screw 3 x 8	1
Y118		Hexagon Socket Head Bolt 3 x 6	2
Y119		Binding Head Taping Screw 3 x 20	2
Y120		Pan Head Screw 3 x 6	10
Y121		Pan Head Taping Screw 2.3 x 6	2
Y122		Pan Head Screw 2 x 8	2
Y123		Spring Washer 3 x 5.9 x 0.7	1
Y124		External Thooh Lock Washer 3 x 6.5 x 0.45	6
Y125		Washer 3.3 x 10 x 0.5	1

Ref. No.	Part No.	Description	Q'ty
PACKING			
	141-6-132T-82700	Individual Carton	1
	141-6-144T-38100	Styrol Filler	2
	141-6-231T-25450	Inner Polyethylene Bag, Printed Matter	1
	141-6-410T-02600	Instruction Booklet	1
	141-6-231T-55700	Inner Polyethylene Bag, Set	1
	141-6-415T-15600	Notice, Fuse	1
	141-6-231T-06100	Inner Polythylene Bag. Fuse Accessories	1
	141-6-231T-10250	Inner Polyethylene Bag, Power Supply Cord	1
	123-6-453R-00100	Inspection Sheet	2
	141-6-231T-06100	Inner Polyethylene Bag, Wrenche	1
	141-6-421T-32600	Schematic Diagram	1
	141-6-415T-19400	Notice, SWEDISH	1
	141-6-415T-20300	Notice, HOLLANDER	1
ACCESSORIES			
	4-245T-00100	Antenna, EXT, FM Antenna	1
	4-234T-06171	Fuse 2.5A	2
	141-2-419T-00200	Wrench, for Rotary Knob	1

CABINET EXPLODED VIEW

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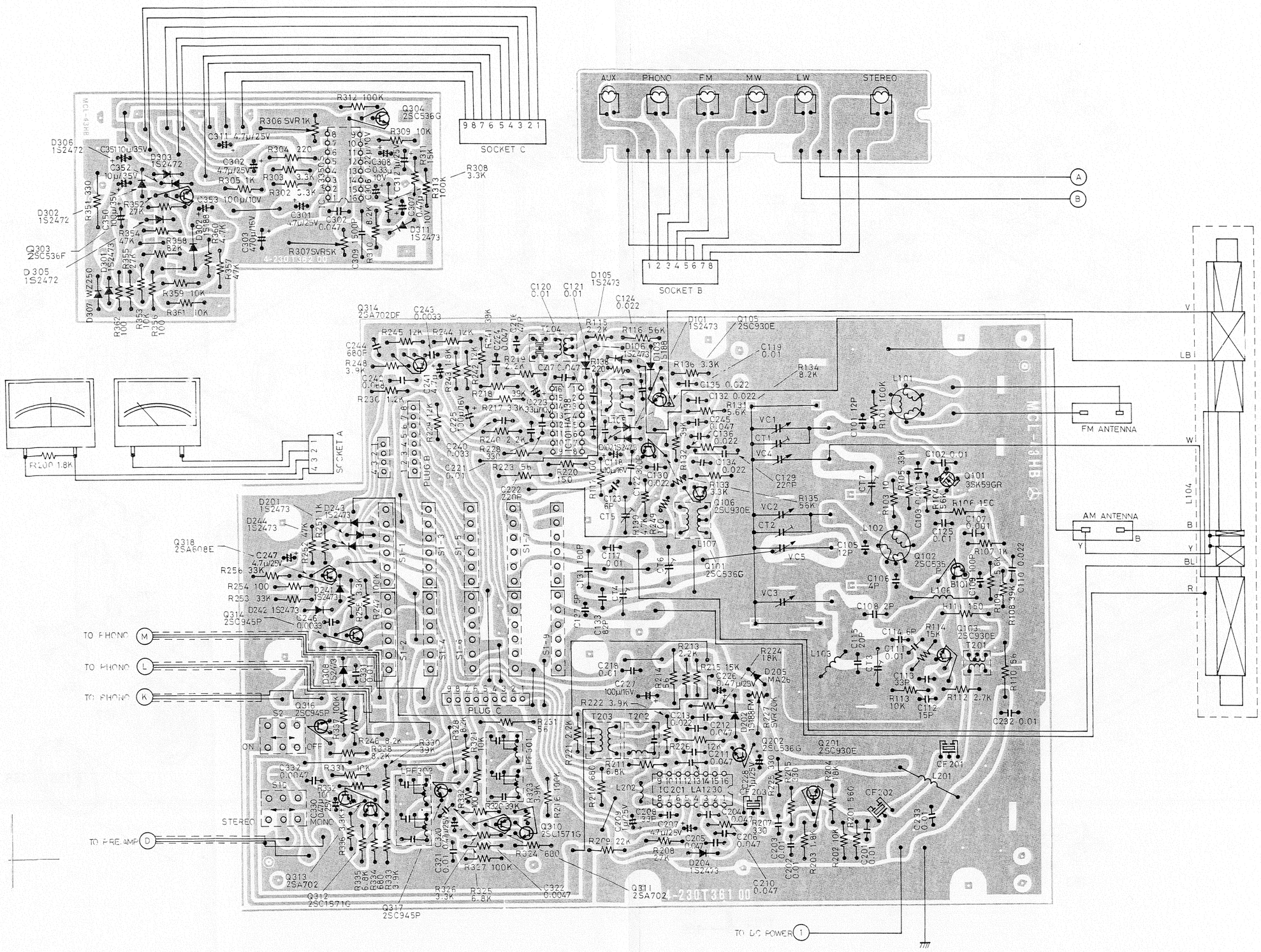
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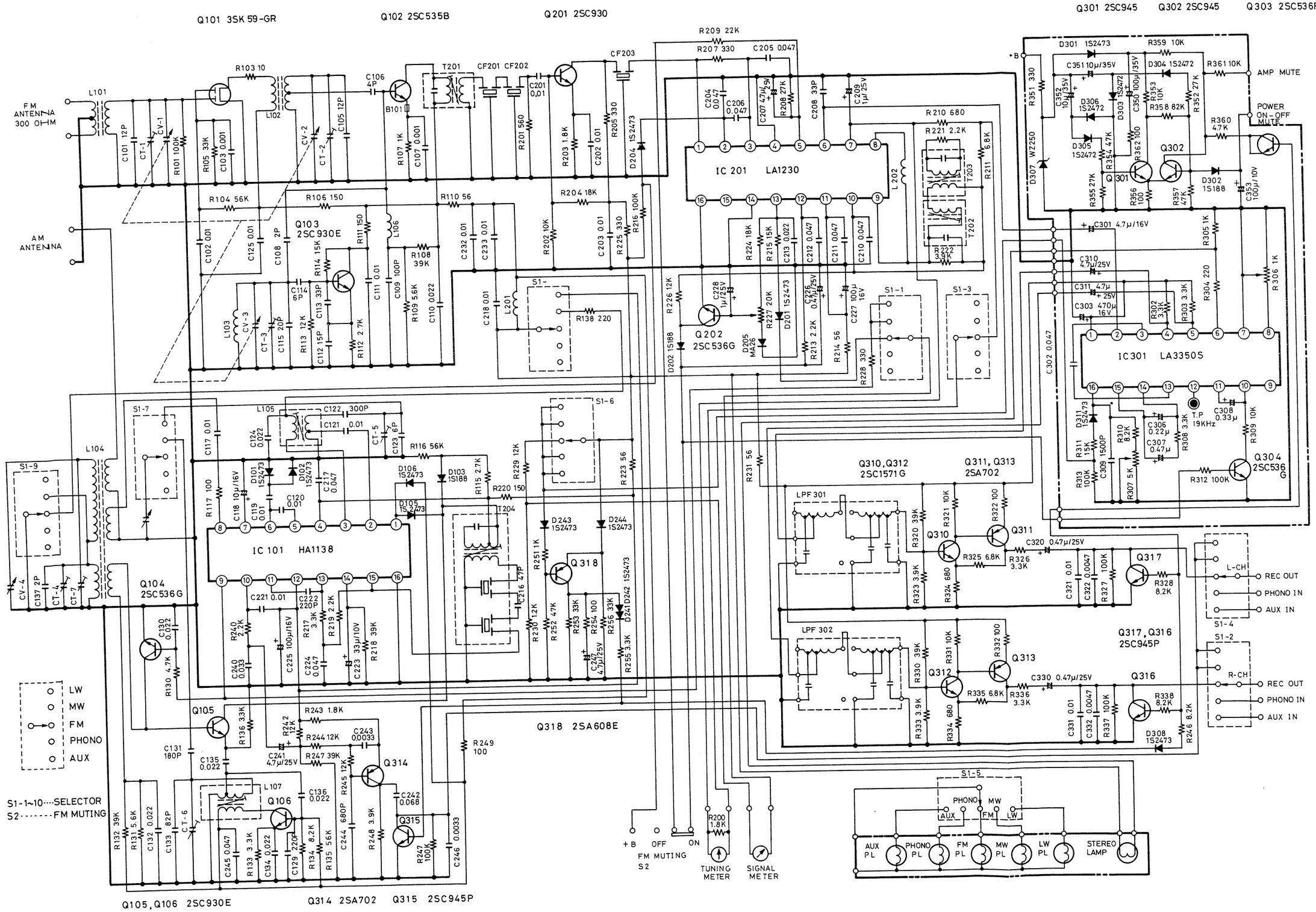
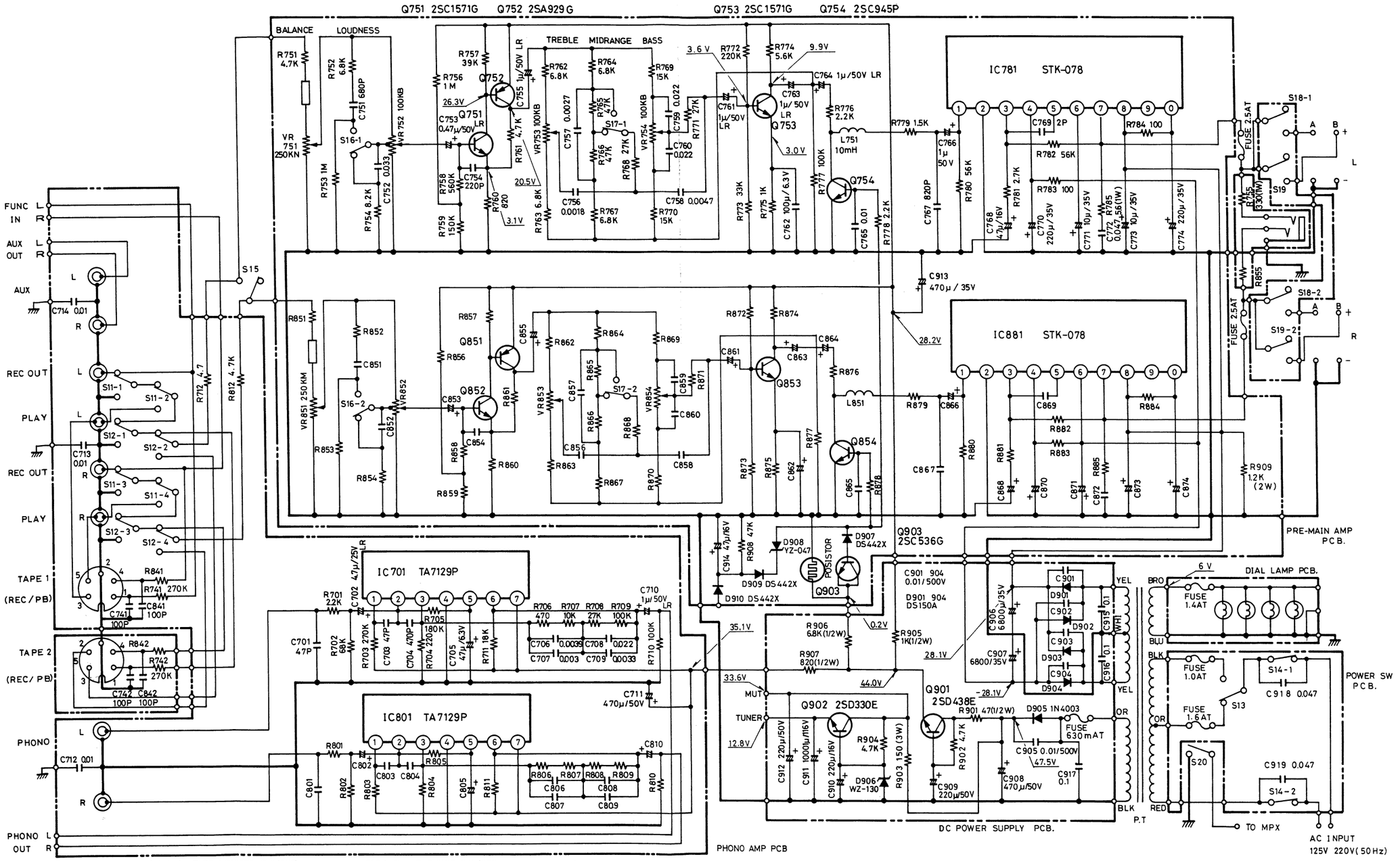
SOCKET B
SOCKET A
PLUG B
PLUG C
FM ANTENNA
AM ANTENNA
TO PHONO
TO PHONO
TO PHONO
TO PRE.AMP
TO D/C POWER
STEREO
MONO
ON
OFF
Q314 2SA702DF
Q318 2SA608E
Q316 2SC945P
Q313 2SA702
Q312 2SC1571G
Q317 2SC945P
Q311 2SA702
Q310 2SC1571G
Q101 2SC536G
Q102 2SC535
Q103 2SC930E
Q105 2SC930E
Q106 2SC930E
Q201 2SC930E
Q202 2SC536G
Q101 3SK59GR
IC201 LA1230
D205 MA26
D202 1SS88FM
D204 1S2473
D311 1S2473
D309 WZ250
T201
T202
T203
T204
L101
L102
L103
L104
L106
L107
L201
L202
CF201
CF202
MCL-3HB

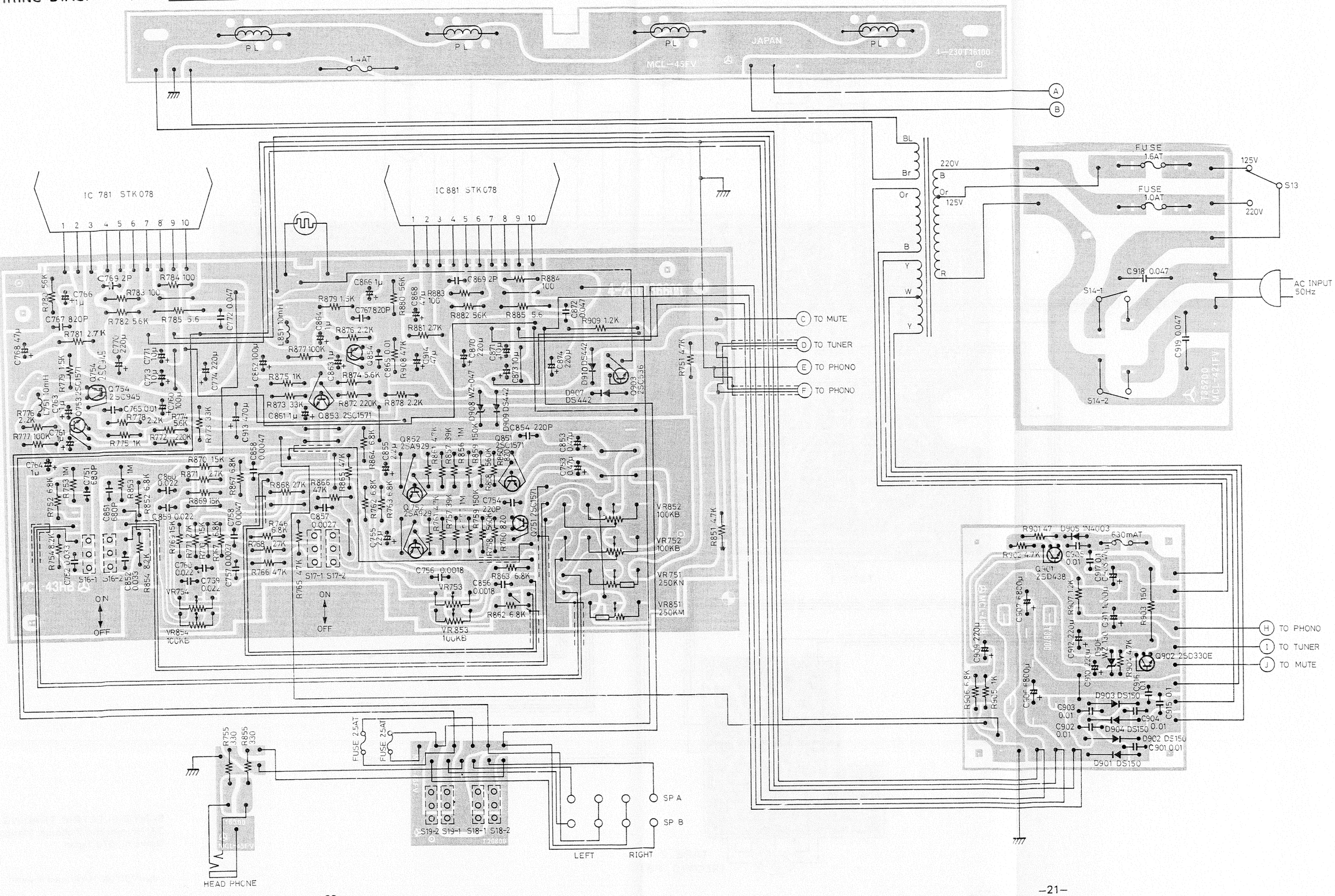
SCHEMATIC DIAGRAM (TUNER)



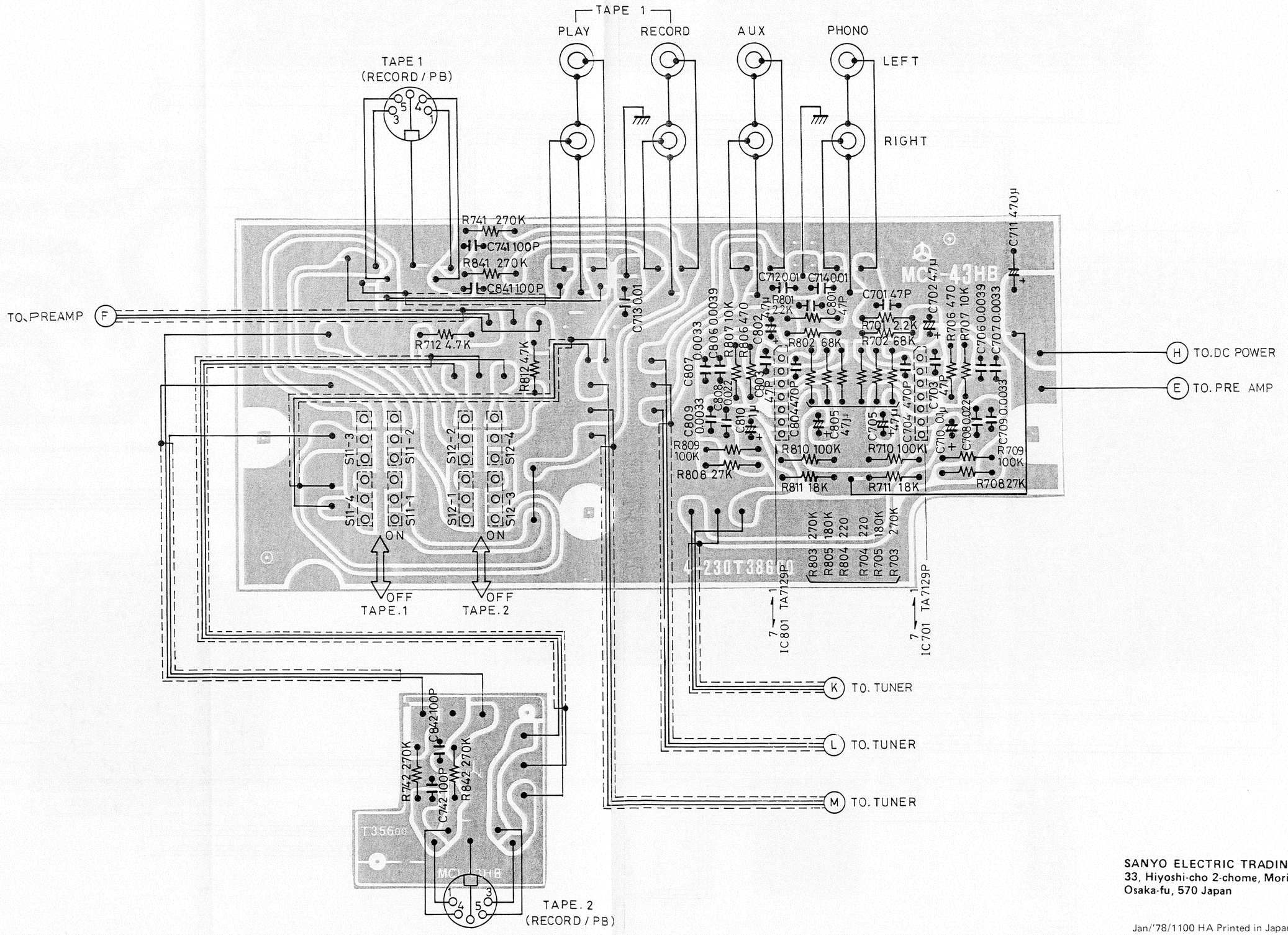


S11-1~4 : TAPE MONITOR SW1(OFF)
S12-1~4 : TAPE MONITOR SW2(OFF)
S13 : VOLTAGE SELECT SW
S14-1~2 : POWER SW(ON)
S15 : MONO/STEREO SELECT SW(OFF)
S16-1~2 : LOUDNESS SW (OFF)
S17-1~2 : MIDRANGE BOOST SW(OFF)
S18-1~2 : SPEAKER SELECT SW A(OFF)
S19-1~2 : SPEAKER SELECT SWB(OFF)
S20 : MUTING SW(OFF)

WIRING DIAGRAM (AMP)



WIRING DIAGRAM (PHONO AMP)



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